

**The New York Times**

September 24, 2012

# Bias Persists for Women of Science, a Study Finds

By KENNETH CHANG

Science professors at American universities widely regard female undergraduates as less competent than male students with the same accomplishments and skills, a new study by researchers at Yale concluded.

As a result, the report found, the professors were less likely to offer the women mentoring or a job. And even if they were willing to offer a job, the salary was lower.

The bias was pervasive, the scientists said, and probably reflected subconscious cultural influences rather than overt or deliberate discrimination.

Female professors were just as biased against women students as their male colleagues, and biology professors just as biased as physics professors — even though more than half of biology majors are women, whereas men far outnumber women in physics.

“I think we were all just a little bit surprised at how powerful the results were — that not only do the faculty in biology, chemistry and physics express these biases quite clearly, but the significance and strength of the results was really quite striking,” said Jo Handelsman, a professor of molecular, cellular and developmental biology at Yale.

Dr. Handelsman was the senior author of an article reporting the findings, published online on Monday by Proceedings of the National Academy of Sciences.

Nancy Hopkins, a professor of biology at the Massachusetts Institute of Technology who has long talked about continuing barriers to women in science, described the study as “enormously important.”

Dr. Hopkins said that small slights, accumulated over the course of a career, slowed many women of science. “They don’t have the confidence level to get to the top,” she said. “They’re getting undercut.”

She added, “People tend to think that the problem has gone away, but alas, it hasn’t.”

Discussions of gender bias in science and mathematics have long been complicated by a host of factors — including whether women receive preferential treatment through affirmative action or whether innate differences indeed exist between men and women.

To avoid such complications, the Yale researchers sought to design the simplest study possible. They contacted professors in the biology, chemistry and physics departments at six major research universities — three private and three public, unnamed in the study — and asked them to evaluate, as part of a study, an application from a recent graduate seeking a position as a laboratory manager.

All of the professors received the same one-page summary, which portrayed the applicant as promising but not stellar. But in half of the descriptions, the mythical applicant was named John and in half the applicant was named Jennifer.

About 30 percent of the professors, 127 in all, responded. (They were asked not to discuss the study with colleagues, limiting the chance that they would compare notes and realize its purpose.)

On a scale of 1 to 7, with 7 being highest, professors gave John an average score of 4 for competence and Jennifer 3.3. John was also seen more favorably as someone they might hire for their laboratories or would be willing to mentor.

The average starting salary offered to Jennifer was \$26,508. To John it was \$30,328.

The bias had no relation to the professors' age, sex, teaching field or tenure status. "There's not even a hint of a difference there," said Corinne Moss-Racusin, a postdoctoral social psychology researcher who was the lead author of the paper.

Dr. Handelsman said previous studies had shown similar subconscious bias in other occupations. But when she discussed the concerns with other scientists, many responded that scientists would rise above it because they were trained to analyze objective data rationally.

"I began to, on the one hand, wonder, 'Well, perhaps that's true: maybe people who are trained to be objective have some way of ferreting these out,' " she said. "But on the other hand, if scientists were no different from all the other groups that have been studied, that's something that we should know."

# Science faculty's subtle gender biases favor male students

1. Corinne A. Moss-Racusin<sup>a, b</sup>,
2. John F. Dovidio<sup>b</sup>,
3. Victoria L. Brescoll<sup>c</sup>,
4. Mark J. Graham<sup>a, d</sup>, and
5. Jo Handelsman<sup>a, 1</sup>,

## + Author Affiliations

1. <sup>a</sup>*Department of Molecular, Cellular and Developmental Biology,*
2. <sup>b</sup>*Department of Psychology,*
3. <sup>c</sup>*School of Management, and*
4. <sup>d</sup>*Department of Psychiatry, Yale University, New Haven, CT 06520*

1. Edited\* by Shirley Tilghman, Princeton University, Princeton, NJ, and approved August 21, 2012 (received for review July 2, 2012)

## Abstract

Despite efforts to recruit and retain more women, a stark gender disparity persists within academic science. Abundant research has demonstrated gender bias in many demographic groups, but has yet to experimentally investigate whether science faculty exhibit a bias against female students that could contribute to the gender disparity in academic science. In a randomized double-blind study ( $n = 127$ ), science faculty from research-intensive universities rated the application materials of a student—who was randomly assigned either a male or female name—for a laboratory manager position. Faculty participants rated the male applicant as significantly more competent and hireable than the (identical) female applicant. These participants also selected a higher starting salary and offered more career mentoring to the male applicant. The gender of the faculty participants did not affect responses, such that female and male faculty were equally likely to exhibit bias against the female student. Mediation analyses indicated that the female student was less likely to be hired because she was viewed as less competent. We also assessed faculty participants' preexisting subtle bias against women using a standard instrument and found that preexisting subtle bias against women played a moderating role, such that subtle bias against women was associated with less support for the female student, but was unrelated to reactions to the male student. These results suggest that interventions addressing faculty gender bias might advance the goal of increasing the participation of women in science.